

REMARKS

A. Status of the Claims

Claims 5, 6, 7, and 8 have been amended without prejudice. Support for the amendments can be found throughout the specification, e.g., on page 3, line 10 to page 4, line 24.

New claims 9-12 have been added. Support for the new claims can be found throughout the specification, e.g., on page 4, lines 20-24.

Claims 1-4 were previously canceled without prejudice.

Claims 5-12 are pending in the application.

Applicants respectfully submit that no new matter was added by virtue of this amendment.

B. Claim Rejections- 35 U.S.C. § 102/103

In the Office Action, the Examiner rejected claims 5-8 under 35 U.S.C. § 102(e) as being anticipated by, or, in the alternative under 35 U.S.C. § 103(a) as being obvious over, U.S. Patent No. 6,417,428 (Thomashow et al.).

Initially, Applicants note that, at the priority date of the present application, as described on pages 2-3 of the present application, “it ...[was] reported [in the art] that a plurality of genes are involved in the acquisition of dehydration, low temperature or salt tolerance in plants [Plant Physiol., 115:327-334 (1997)]. Therefore, a gene encoding a transcription factor capable of activating simultaneously the expression of a plurality of genes involved in the acquisition of stress tolerance has been introduced into plants, yielding plants with high stress tolerance.”

However, Applicants submit that, as described on page 2 of the present application, “when a gene which induces the expression of a plurality of genes is introduced into a host plant (e.g., like in Thomashow et al.), the genes are activated at the same time. As a result, the energy of the host plant is directed to production of the products of these genes and intracellular metabolism of such gene products, which often brings about delay in the growth of the host plant or dwarfing of the plant.”

Applicants respectfully note, that at the time of filing of this application, it was not known in the art what kind of promoters should be used for high level and stable expression of artificially introduced genes only when the plant is subject to the stress. Applicants submit that the inventors were the first to find and demonstrated that, e.g., the self-amplification mechanism, i.e., the use of a promoter comprising DRE region as presently claimed, is useful for producing stress resistant plants.

Applicants submit that amended claims 5, 6, 7, and 8 all recite in part a protein or a DNA “... operably linked downstream of a stress responsive promoter comprising DRE region(s).”

Applicants further submit that the stress responsive promoter according to the present invention is a promoter comprising a DRE region to which, for example, DREB proteins such as DREB1B protein can bind.

Applicants also submit that the use of the stress-responsive promoter (e.g., comprising DRE region(s) as presently claimed, enables, inter alia, DREB1B gene to amplify itself in response to environmental stress (self-amplification). Applicants further submit that as a result of high level and stable expression of DREB1B gene in a short period of time, the transgenic plant acquires stress resistance without dwarfing.

In contrast, Applicants submit that Thomashow et al. describe nothing about the stress-responsive promoter comprising DRE region(s) as recited in the present claims. Applicants respectfully note that, instead, Thomashow et al. describe a “tissue specific promoter” that is used to alter COR gene expression in tissues that are highly sensitive to stress and “a promoter that turns on at warmer temperature than the temperature at which the plant normally exhibits cold tolerance (See page 29 of Thomashow et al.). Applicants also note that the latter promoter means a promoter that is similar to a constitutive promoter, because this promoter can induce the gene expressions at warmer temperature than the temperature at which the plant normally exhibits cold tolerance.

Specifically, Applicants submit that Thomashow et al. states that “a strong constitutive promoter could be used to cause increased levels of COR gene expression in both non-stress and stressed plants which in turn, results in enhanced freezing and dehydration tolerance.” Applicants respectfully note that Thomashow et al. provide only a transgenic plant transformed with CBF1 gene under the control of the strong constitutive promoter: cauliflower mosaic virus (CaMV) 35S promoter (See page 45, last paragraph of Thomashow et al.) as working examples of transgenic plants.

However, as discussed above, Applicants submit that, when a promoter such as CaMV35S which induces the expression of a plurality of genes is introduced into a host plant, the genes are activated at the same time. As a result, the energy of the host plant is directed to production of the products of these genes and intracellular metabolism of such gene products, which often brings about delay in the growth of the host plant or dwarfing of the plant (See Example 4 of the present invention).

Accordingly, Applicants submit that Thomashow et al. do not teach or suggest part a protein or a DNA “... operably linked downstream of a stress responsive promoter comprising DRE region(s)” as recited in the present claims.

Applicants submit that inventors conducted preliminary experiments using promoters which did not comprise a DRE region (such as erd1, rd22 and rd29B), and that the results of these experiments showed low level and unstable expression of the introduced genes in response to the stress.

Applicants further submit that Thomashow et al. teach away from the use of stress responsive promoter comprising a DRE region (e.g., to which said DREB1B protein can bind) as presently claimed.

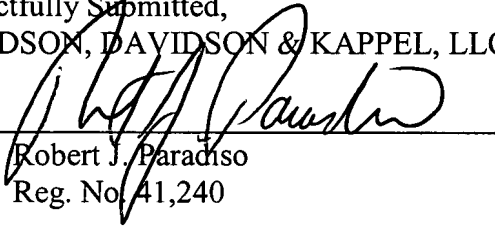
For the foregoing reasons, Applicants respectfully request withdrawal of the rejections over the Thomashow et al.

Conclusion

Reconsideration of the present application, as amended, is requested. If, upon review, the Examiner determines that the application is not in condition for allowance, Applicants respectfully request the Examiner to contact the undersigned for a telephone interview before an Office Action is issued in the application. A favorable action on the merits is earnestly solicited.

Respectfully Submitted,
DAVIDSON, DAVIDSON & KAPPEL, LLC

By: _____


Robert J. Paradiso
Reg. No. 41,240

DAVIDSON, DAVIDSON & KAPPEL, LLC
485 Seventh Avenue, 14th Floor
New York, New York 10018
(212) 736-1940